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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/931,406 | 08/17/2001 | Hifumi Nagai | 1823-0113P | 3883 |

2292 7590 03/27/2003

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

JACKSON, MONIQUE R

ART UNIT PAPER NUMBER 7

1773

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application N . 09/931,406 | Applicant(s) NAGAI ET AL. | |
| | Examiner Monique R Jackson | Art Unit 1773 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: At page 4, line 9, "ICAS" should probably be "IACS". Further, though it is assumed that IACS is the abbreviation for International Accepted Conductivity Standard, the specification should include the complete term upon the first occurrence of the abbreviation for clarity purposes.

Appropriate correction is required.

Claim Objections

2. Claim 6 is objected to because of the following informalities: Claim 6 recites the limitation "between that prior to heating and the heated and that after fully annealed" however the Examiner believes the limitation should read "between that prior to heating and that after fully annealed" as recited in Claim 3. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 2, and 4-5 recite the limitation "50%IACS or more of electrical conductivity". However considering the electrical conductivity is dependent on the temperature and frequency at which the conductivity is measured, the recitation of an electrical conductivity without reciting the testing conditions is indefinite for one having ordinary skill in the art would not be reasonably apprised of the scope of the claimed invention and could not interpret the

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metes and bounds of the claim so as to understand how to avoid infringement. Further, it is noted that Claims 1, 2 and 4-5 contain a parenthetical expression wherein it is unclear whether the limitation in the parenthesis is meant to be part of the claimed invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3 are rejected under 35 U.S.C. 102(a) or (b) as being anticipated by JP

09157775A (JP'775.) JP'775 teaches a copper alloy film for electronic equipment, such as circuits, wherein the copper alloy has excellent electric conductivity, with examples having greater than 50%IACS, and comprises 0.05 to 0.4% CR, 0.03 to 0.25 Zr and 0.06 to 2.0% Zn, 5 to 50ppm O, 5 to 20ppm S, and the balance Cu with inevitable impurities, wherein the film has an oxide layer on the surface with a thickness of 100Å (10nm) or less, and if required, the Cu alloy may include a total of 0.01 to 1.0% of one or more of Ni, Sn, In, Mn, P and Mg (Abstract.) With respect to the peeling strength as instantly claimed and the tensile strength upon heating, the Examiner takes the position that the copper alloy film taught by JP'775 would inherently exhibit the same tensile strength properties and the same peeling strength as instantly claimed given that the composition and oxide layer thickness of the copper alloy film taught by JP'775 is the same as instantly claimed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of JP'775. The admitted prior art, particularly at Page 2, line 16-Page 3, discloses a laminate comprising a thermotropic liquid crystal polymer thermally-fusion bonded to a copper alloy foil wherein the liquid crystal polymer can be made to agree with the coefficient of thermal expansion of the copper foil suitable for use in electronic applications such as circuit boards. The admitted prior art does not teach that the copper foil has a metal composition as instantly claimed and further comprises an oxide layer on the surface with a thickness of 10nm or less, however, JP'775 teaches that a copper alloy film comprising a copper alloy comprising 0.05 to 0.4% CR, 0.03 to 0.25 Zr and 0.06 to 2.0% Zn, 5 to 50ppm O, 5 to 20ppm S, and the balance Cu with inevitable impurities, wherein the film has an oxide layer on the surface with a thickness of 100Å (10nm) or less, and if required, the Cu alloy may include a total of 0.01 to 1.0% of one or more of Ni, Sn, In, Mn, P and Mg, which reads on the instantly claimed composition, provides a copper alloy film with excellent properties for electronic equipment including excellent in strength, electric conductivity, etching properties, bendability and press blanking properties wherein the electric conductivity of the examples is greater than 50%IACS as instantly claimed. Therefore, one having ordinary skill in the art at the time of the invention would have been motivated to utilize the copper alloy film taught by JP'775 for the

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invention disclosed by the admitted prior art in order to provide improved properties such as strength, electric conductivity, and etching properties, wherein the adhesion properties between the liquid crystal polymer and the copper foil would fall within the instantly claimed range upon thermal fusion and the tensile properties of the copper foil upon heating would be the same given that the materials are the same as instantly claimed.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mita et al (USPN 6,426,548) teaches an electronic laminate comprising an insulating film thermally fusion-bonded to a copper alloy film wherein the insulating layer may be a liquid crystal polymer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 703-308-0428. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Monique R. Jackson
Primary Examiner
Technology Center 1700
March 23, 2003